REPORT DOCUMENTATION PAGE

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. **PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
2/09/2012	Final	07/15/2009 - 11/30/2011

4. TITLE AND SUBTITLE		5a. CONTRACT NUMBER
Establishment of a Data Repository for Cognitive Modeling		
		5b. GRANT NUMBER
		FA9550-09-2-0001
		5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)		5d. PROJECT NUMBER
Myung, Jay, I		
Pitt, Mark, A.		5e. TASK NUMBER
		5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	8. PERFORMING ORGANIZATION REPORT NUMBER
OHIO STATE UNIVERSITY RESEARCH FOU 1960 KENNY RD COLUMBUS OH 43210-1063 (614) 292-3815	

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
AF OFFICE OF SCIENTIFIC RESEARCH 875 N. RANDOLPH ST. ROOM 3112 ARLINGTON VA 22203	AFOSR
	11. SPONSOR/MONITOR'S REPORT NUMBER(S) AFRL-OSR-VA-TR-2012-0742

12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for Public Release

13. SUPPLEMENTARY NOTES

Prepared by Mark Pitt, Co-PI on the grant. A form to change his status to PI was submitted in summer 2011.

14. ABSTRACT

Quantitative modeling is a powerful tool with which to study human performance and behavior. Despite the proven usefulness of modeling, it remains under-utilized by the research community, in part because models can be difficult to implement and data sets difficult to obtain or generate. The purpose of this project was to promote cognitive modeling by creating an online repository for the submission and acquisition (i.e., downloading) of computational models of cognition and corresponding data sets to model. The repository was created (cmr.osu.edu). All site visitors can peruse and download content. Those who register can upload content.

15. SUBJECT TERMS

Cognitive Modeling, Repository, models, datasets, cognitive science

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Mark Pitt
a. REPORT	b. ABSTRACT	c. THIS PAGE	UU		19b. TELEPHONE NUMBER *(include area code)*
U	U	U			614-292-4193

Final Report

The purpose of this project was to create the Cognitive Modeling Repository (CMR), an online repository for the submission and dissemination of computational models of cognition and data sets with which to model. This objective has been met. The repository can be found at cmr.osu.edu.

Summary of Repository Creation

Design of the repository went through multiple revisions to maximize ease of navigation and use, ensure browser compatibility, and ensure stability. The process for submitting a model or a data set has been designed to be simple. Currently, only models and data sets that have appeared in peer-reviewed publications can be submitted. Once the user has compiled the necessary files, submission takes no more than ten minutes. Submitters must agree to the terms of the Creative Commons Zero (CC0) license, which grants others use of the model or data set free of copyright restrictions to the extent allowed by law. It is the formalized equivalent of the requirement by some publishers that authors make their model and data available to other researchers upon request, once a manuscript is published.

The browsing of models and data sets stored in the repository is similarly simple in functionality. The user is provided with a subset of the most potentially useful information in a visual layout that minimizes the amount of searching and reduces the number of mouse clicks necessary to find information.

Stress tests (usability and bug-finding) were performed with groups of individuals to evaluate and improve the robustness of the web site. There are 4.5 terabytes of disk space available for model and data storage. The server containing the repository is located in the Department of Psychology at Ohio State University.

The Challenge of Populating the Repository

One goal of the project was to *seed* the repository with 30 models and data sets prior to opening it the public. These submissions were to be well-known models and data sets in the field, with the idea that they would act as a catalyst in encouraging researchers in the cognitive science community to not only download models and data sets, but also make contributions as well. The long-term goal was that the repository would evolve into a regularly used community resource, much like a journal.

Although there was widespread and virtually unanimous enthusiasm for the repository, including praises from many individuals in AFRL and AFOSR (this feedback was obtained at conference presentations promoting the web site), the PIs were able to obtain contributions of only eight models and a half-dozen data sets. Many attempts were made to increase contributions, including repeated requests to do so, suggesting other lab personnel (e.g., graduate students) make the contribution, and offering to make the submission on behalf of the author. These strategies have been unsuccessful thus far, and highlight the difficulty of making this task a priority for busy scholars.

Suggested Next Steps in Repository Development

Data repositories are the norm in many fields (e.g., astronomy, computer science, biology, chemistry). They are an easy method by which to promote data sharing and benefit the science by reducing duplication and facilitating knowledge accumulation. Establishment of CMR is a necessary first step to ensure cognitive modeling, and cognitive science more generally, follows in this same path. Critical to CMR's success is requiring contributions from modelers. This has been achieved in other disciplines by journal publishers making submission (e.g., of a data set) a requirement prior to manuscript publication. To convince publishers to make such a change in publication policy would require legwork. One strategy would be to form an executive committee of respected scholars in modeling who are sympathetic to the repository and have committee representatives make the case to publishers. This has worked in some fields. Support from funding agencies, such as AFOSR (NIH and NSF have funded repositories) would help. AFOSR could also implement a similar policy by making model and data set submission a requirement for research funding.

On a more pragmatic level, future enhancements of the site should address two issues: expanding content and platform longevity. CMR should contain educational materials as another means of promoting and encouraging modeling. This was a goal of the original proposal and the PIs began to assemble some materials, but they are insufficient and incomplete to add to the current site. What is needed are written tutorials and video lectures on a range of modeling styles. The availability of such content would attract a wider range of users and has the potential to increase interest in modeling by students and researchers alike.

The second issue pertains only to the software used for model and data set submission. It is written in Adobe Flash, which was chosen because it is in wide use and applications written in Flash are browser and platform independent. In December of 2011, Adobe announced it was abandoning Flash in favor of HTML5. The implications of this for CMR are that, although the submission pages will work fine for a couple of years (all browsers will continue to support flash for the time being), the software will eventually become obsolete. The sooner this part of CMR is rewritten in HTML5, the better.